

WHAT IS CLAIMED IS:

1. A method of operating a fixed wireless communications system having a base station and customer premises equipment ("CPE"), the system utilizing demand assignment ("DA") media access control ("MAC") and variable length protocol data units ("PDUs") for
- 5 messages between the base station and the CPE, which comprises:

in response to the failure of the CPE to receive all of the PDUs of a message from the base station,

opening a PDU at the CPE, inserting ARQ data therein,

closing the PDU, and

transmitting the ARQ data-containing PDU to the base station; and

in response to the receipt by the base station of the ARQ data-containing PDU,

opening the ARQ data-containing PDU and removing the ARQ data,

determining from the ARQ data which PDUs were missing at the CPE, and

re-sending the missing PDUs from the base station to the CPE.

2. A method as in Claim 1, wherein:

the system is a multichannel multipoint distribution system.

3. A method as in Claim 2, wherein:

the MAC is DOCSIS.

4. A method as in Claim 1, wherein:
whether or not the CPE receives all of the PDUs of a message from the base
station is ascertained by
inserting a different sequence number into each PDU, and
5 at the CPE determining if any sequence number is missing.

5. A method as in Claim 4, wherein:
the ARQ data includes any missing sequence numbers, which the base station
utilizes in identifying those PDUs to be re-sent.

10 6. A method as in Claim 5, wherein:
the sequence numbers are generated according to a rule which is available at
the base station and the CPE.

15 7. A method as in Claim 6, wherein:
each sequence number is a member of a series, adjacent members of which
differ by a common factor.

20 8. A method as in Claim 7, wherein:
the series and its members include alpha-numeric characters.

9. A method as in Claim 1, wherein:

the PDUs are Ethernet packets which include a plurality of layers or fields.

10. A method as in Claim 9, wherein:

5 each Ethernet packet is modified to include an ARQ layer inserted between two originally adjacent layers of the Ethernet packet.

11. A method as in Claim 10, wherein:

the ARQ layer is inserted between a data type layer and a user data layer.

12. A method as in Claim 10, wherein:

the ARQ layer includes a sequence number.

13. A method as in Claim 12, wherein:

15 whether or not the CPE receives all of the Ethernet packets of a message from the base station is ascertained by inserting a different sequence number into the ARQ layer of each Ethernet packet, and

at the CPE determining if any sequence number is missing.

20 14. A method as in Claim 13, wherein:

the ARQ data includes any missing sequence numbers, which the base station utilizes in identifying those Ethernet packets to be re-sent.

15. A method as in Claim 14, wherein:

the sequence numbers are generated according to an algorithm which is available at the base station and the CPE.

5 16. A method as in Claim 15, wherein:

the sequence numbers are members of a series, adjacent members of which differ by a common factor.

10 17. A method as in Claim 16, wherein:

the series and its members include alpha-numeric characters.

18. A fixed wireless communications system having a base station and customer premises equipment ("CPE"), the system utilizing demand assignment ("DA") media access control ("MAC") and variable length protocol data units ("PDUs") for messages between the base station and the CPE, which comprises:

5 a processing facility at the CPE for detecting the failure of the CPE to receive all of the PDUs of a message from the base station and in response to so detecting for opening a PDU at the CPE, inserting ARQ data therein, closing the PDU, and transmitting the ARQ data-containing PDU to the base station; and

10 a processor at the base station responsive to the receipt by the base station of the ARQ data-containing PDU for opening the ARQ data-containing PDU and removing the ARQ data, determining from the ARQ data which PDUs were missing at the CPE, and re-sending the missing PDUs from the base station to the CPE.

19. A system as in Claim 18, wherein:

15 the system is a multichannel multipoint distribution system.

20. A system as in Claim 19, wherein:

the MAC is DOCSIS.

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21. A system as in Claim 18, wherein:
the processor at the base station inserts a different sequence number into each
PDU of the message, and

the processing facility at the CPE determines if any sequence number is
5 missing, thereby ascertaining whether or not the CPE has received all of the PDUs of the
message.

22. A system as in Claim 21, wherein:
the ARQ data includes any missing sequence numbers, which the processor at
10 the base station utilizes in identifying those PDUs to be re-sent.

23. A system as in Claim 22, wherein:
the sequence numbers are generated according to a rule which is available at
the base station's processor and at the CPE's processing facility.

24. A system as in Claim 23, wherein:
each sequence number is a member of a series, adjacent members of which
15 differ by a common factor.

20 25. A method as in Claim 24, wherein:
the series and its members include alpha-numeric characters.

26. A system as in Claim 18, wherein:

the PDUs are Ethernet packets which include a plurality of layers or fields.

27. A system as in Claim 26, wherein:

5 each Ethernet packet is modified to include an ARQ layer inserted by the processor at the base station between two originally adjacent layers of the Ethernet packet.

28. A system as in Claim 27, wherein:

the ARQ layer is inserted between a data type layer and a user data layer.

29. A system as in Claim 28, wherein:

the ARQ layer includes a sequence number.

30. A system as in Claim 18, wherein:

15 the processor at the base station inserts a different sequence number into each Ethernet packet of the message, and

the processing facility at the CPE determines if any sequence number is missing, thereby ascertaining whether or not the CPE has received all of the PDUs of the message.

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31. A system as in Claim 30, wherein:

the ARQ data sent by the processing facility at the CPE includes any missing sequence numbers, which the processor at the base station utilizes in identifying those Ethernet packets to be re-sent.

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32. A system as in Claim 31, wherein:

the sequence numbers are generated according to an algorithm which is available at processor of the base station and processing facility of the CPE.

33. A system as in Claim 32, wherein:

the sequence numbers are members of a series, adjacent members of which differ by a common factor.

34. A method as in Claim 33, wherein:

the series and its members include alpha-numeric characters.